

1. (Twice Amended) A vertical MOS transistor comprising:

a semiconductor substrate having a first conductivity type;

an epitaxial growth layer having the first conductivity type formed on the semiconductor substrate;

a body region having a second conductivity type formed on the epitaxial growth layer;

a trench formed through the body region of the second conductivity type so as to reach inside of the epitaxial growth layer of the first conductivity type;

a gate insulating film formed along an upper surface of the body region of the second conductivity type and a wall surface and a bottom surface of the trench;

a polycrystalline silicon gate partially filling the trench so as to be in contact with the gate insulating film and surrounded by the gate insulating film;

a second gate material comprised of one of a silicon oxide film and a silicon nitride film filling a remaining portion of the trench not filled by the polycrystalline silicon gate so as to be in contact with the polycrystalline silicon gate and surrounded by the gate insulating film and the polycrystalline silicon gate;

a source region of the first conductivity type formed in the upper surface of the body region of the second conductivity type and around the trench so as to be in contact with the gate insulating film;

a gate electrode connected to the polycrystalline silicon gate and the second gate material;

a source electrode connected to the source region;
and

a drain electrode connected to the semiconductor substrate.

ADDITIONAL FEES:

No additional fees are believed required; however, should it be determined that a fee is due, authorization is hereby given to charge any such fee to our Deposit Account No. 01-0268.

REMARKS

In the final Office Action, claims 1 was objected to based on an informality and claims 19 and 20 were rejected under 35 U.S.C. §112, first paragraph, as containing subject matter that was not described in the specification.

Claims 1, 10-18 and 20 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,117,734 to